FAIRCHILD SEMICONDUCTOR®

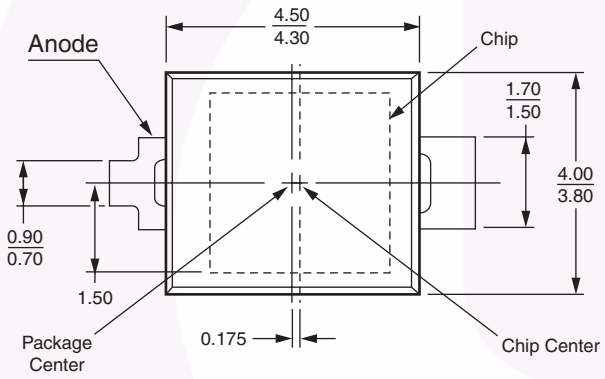
August 2008

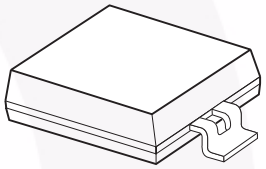
QSB34GR, QSB34ZR, QSB34CGR, QSB34CZR
Surface Mount Silicon Pin Photodiode

Features

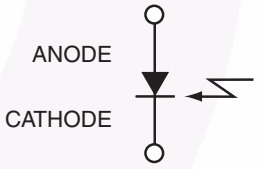
- Daylight Filter (QSB34GR and QSB34ZR only)
- Surface Mount Packages:
  - QSB34GR/QSB34CGR for overmount board
  - QSB34ZR/QSB34CZR for undermount board
- Fast PIN Photodiode
- Wide Reception Angle, 120°
- Large Chip Size = 3mm x 3mm
- Sensitive Area - 2.55mm x 2.55mm
- High Sensitivity
- Low Capacitance
- Available in 0.470" (12mm) width tape on 7" (178mm) diameter reel; 1,000 units per reel

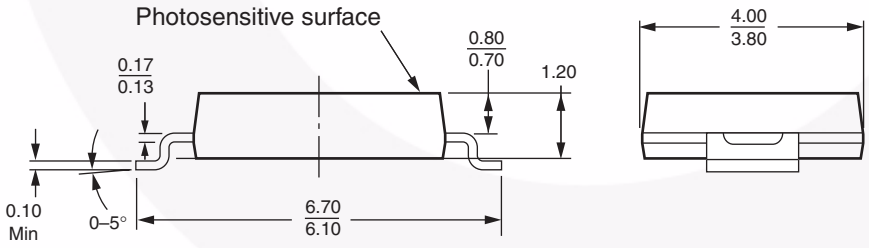
Package Dimensions, QSB34GR





Schematic





Notes:

1. Dimensions for all drawings are in mm.
2. Tolerance of ±.0.13 on all non-nominal dimensions unless otherwise specified.

Absolute Maximum Ratings (T_A = 25°C unless otherwise specified)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Rating	Unit
T_{OPR}	Operating Temperature	-25 to +85	°C
T_{STG}	Storage Temperature	-40 to +85	°C
T_{SOL}	Soldering Temperature	260	°C
V_R	Reverse Voltage	32	V
P_C	Power Dissipation at (or below) 25°C Free Air Temperature	150	mW

Note:

1. Soldering time ≤ 5 seconds

Electrical/Optical Characteristics (T_A =25°C unless otherwise specified)

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to absolute maximum ratings.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_R	Reverse Voltage	I_R = 0.1mA	32			V
$I_{R(D)}$	Dark Reverse Current	V_R = 10V			30	nA
λ_{PK}	Peak Sensitivity	V_R = 5V		940		nm
Θ	Reception Angle @ 1/2 Power			±60		°
I_{PH}	Photo Current	Ee = 1.0mW/cm^2, V_{CE} = 5V(4)	25	37		µA
C	Capacitance	V_R = 3V		25		pF
t_r	Rise Time	V_R = 10V, R_L = 50Ω		50		ns
t_f	Fall Time	V_R = 10V, R_L = 50Ω		50		ns
$\lambda_{0.5}$	Spectral Sensitivity QSB34GR, QSB34ZR QSB34CGR, QSB34CZR		 730 400		 1100 1100	nm

Typical Performance Curves

Fig. 1 Relative Spectral Sensitivity vs. Wavelength

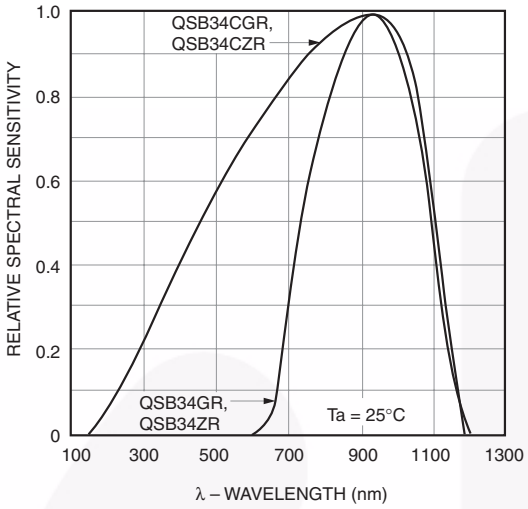


Fig. 2 Short Circuit Current vs. Irradiance

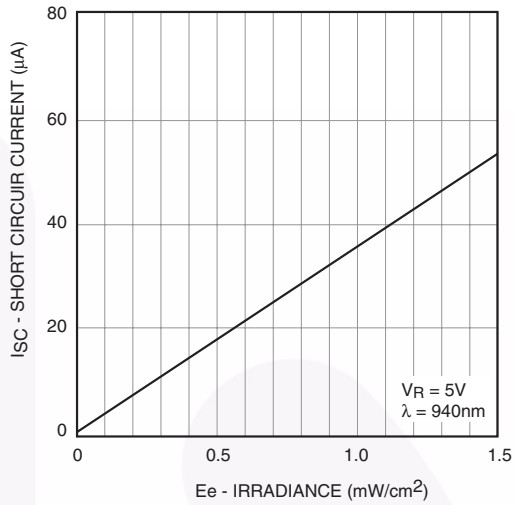


Fig. 3 Capacitance vs. Reverse Voltage

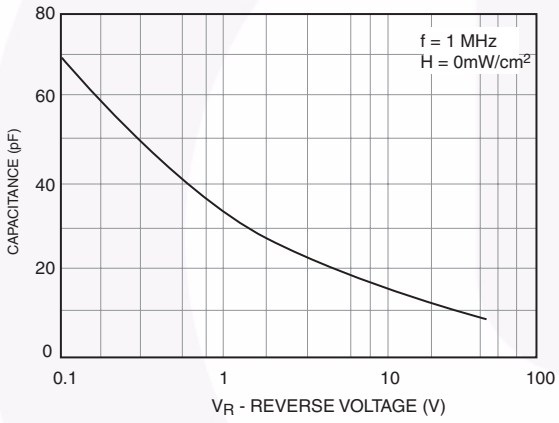


Fig. 4 Dark Current vs. Temperature

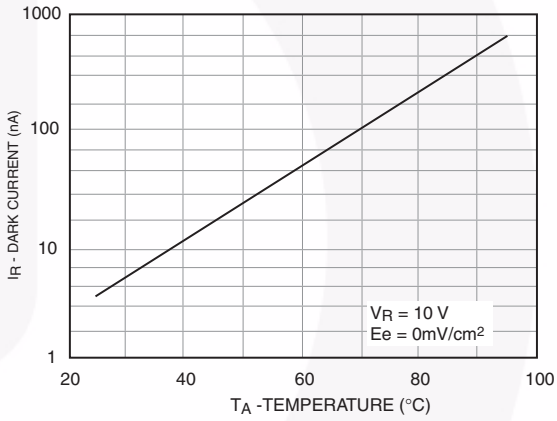


Fig. 5 Dark Current vs. Reverse Voltage

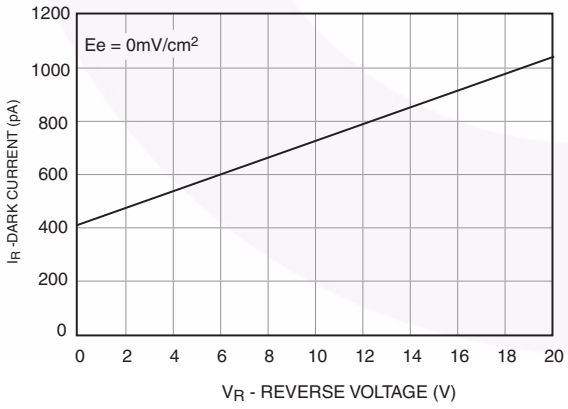
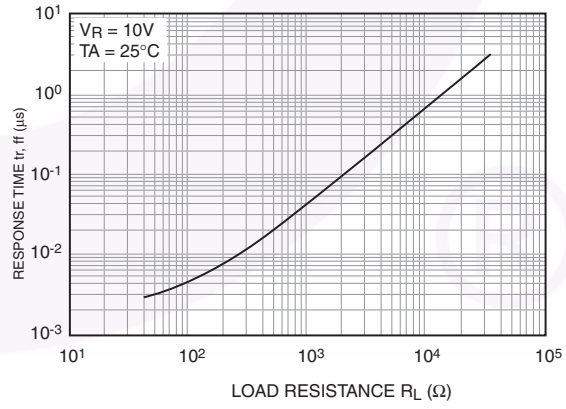
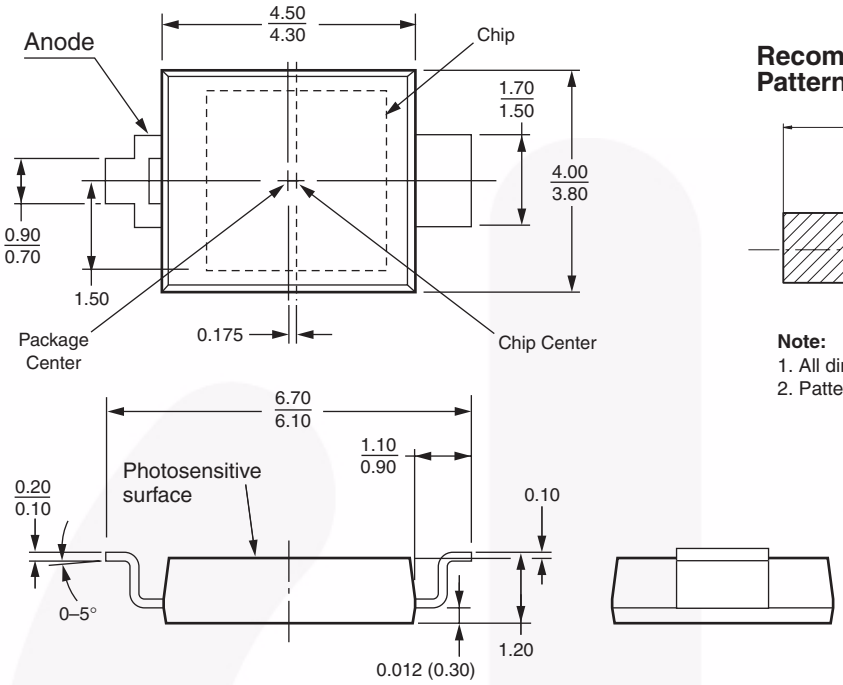


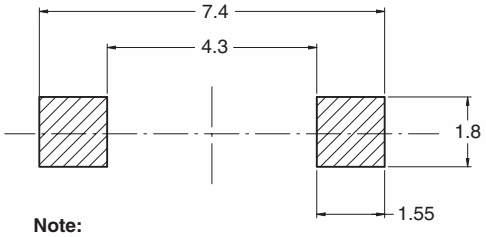
Fig. 6 Response Time vs. Load Resistance



Package Dimensions, QSB34ZR



Recommended Solder Screen Pattern (For Reference Only)

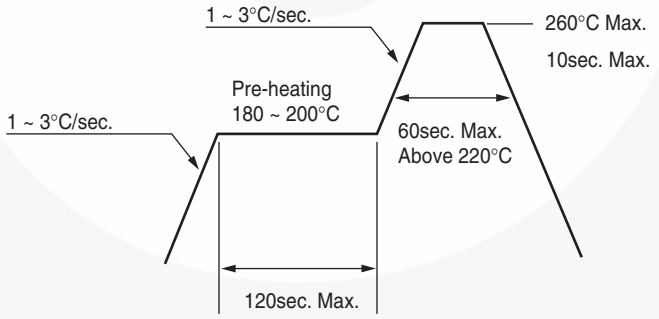


Note:
1. All dimensions in mm
2. Pattern applies to both QSB34GR and QSB34ZR

Note:

1. Dimensions for all drawings are in mm.
2. Tolerance of ±.0.13 on all non-nominal dimensions unless otherwise specified.

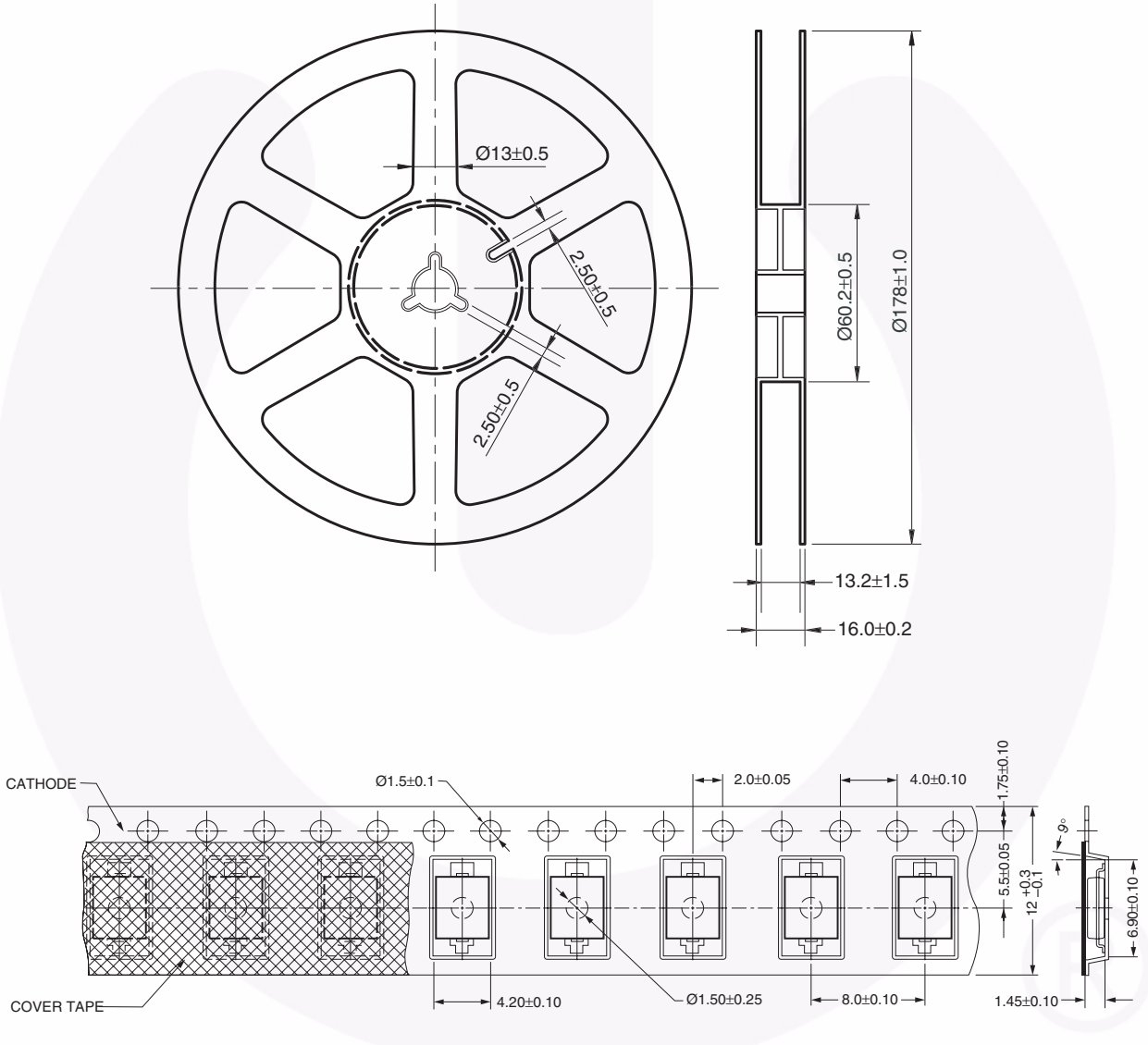
Recommend IR Reflow Soldering Profile



Ordering Information

Option	Description
QSB34GR	Gullwing, 1000 units per reel
QSB34ZR	Z-Bend reversed, 1000 units per reel
QSB34CGR	Gullwing, 1000 units per reel
QSB34CZR	Z-Bend reversed, 1000 units per reel

Tape & Reel Dimensions



Unit: mm

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